Remarks/Arguments:

Claims 1-14 have been amended. No new matter is introduced herein. Claims 1-15 are pending.

Claims 1-15 have been rejected as under 35 U.S.C. §102(b) as being anticipated by Yamada et al. (U.S. 5,692,097). It is respectfully submitted that these claims are patentable over the cited art for the reasons set forth below.

Claim 1, as amended, includes features neither disclosed nor suggested by the cited art, namely:

> ...for each of the frames, frequency-converting the respective acoustic feature parameter by filtering with a plurality of predetermined frequency conversion coefficients to form a corresponding plurality of frequency-converted feature parameters...
>
> ...determining, for each frame, a plurality of similarities or distances between each of the frequency-converted feature parameters and a standard phonemic model...
>
> ...selecting at least one of the plurality of predetermined frequency conversion coefficients... by using the determined plurality of similarities or distances for each of the frames...
>
> normalizing the input utterance by frequency-converting the input utterance using the selected at least one predetermined frequency conversion coefficient... (Emphasis Added)

Claim 8 includes a similar recitation. In addition, claims 1 and 8 have been amended to clarify the language. Basis for the amendment can be found, for example, at p. 8, line 19-p. 12, line 4; p. 12, line 16-p. 13, line 13; p. 15, lines 2-23; p. 18, lines 9-25; and Figs. 2-7. Claims 2-7 and 9-14 have been amended to correspond to respective claims 1 and 8, as amended.

Yamada et al. disclose, in Figs. 1 and 6, a voice recognizing apparatus including feature parameter extracting unit 13 that extracts feature parameters, phoneme similarity calculating unit 15 and normalized similarity vector calculating unit 16. Phoneme similarity calculating unit 15 determines a phoneme similarity for each frame between standard pattern phonemes (in storing unit 14) and the extracted feature parameters (from feature parameter extracting unit 13) to obtain similarity vectors (Col.2, lines 4-10 and Col.2, line 61-Col.3, line 26). Normalized

similarity vector calculating unit 16 normalizes a vector length of each similarity vector to unity (Col.3, lines 46-50).

Yamada et al. do not disclose nor suggest Applicants' claimed features of "frequency-converting the respective acoustic feature parameter by filtering with a plurality of predetermined frequency conversion coefficients to form... frequency-converted feature parameters" or "determining... a plurality of similarities or distances between each of the frequency-converted feature parameters and a standard phonemic model" (emphasis added). These features are neither disclosed nor suggested by Yamada et al. Instead, Yamada et al. compare extracted acoustic features with standard pattern phonemes to determine a phoneme similarity. Yamada et al. are silent on filtering the extracted acoustic featuring parameter with a plurality of predetermined frequency conversion coefficients and, thus, cannot determine similarities or distances between frequency-converted features and a standard phonemic model. In addition, Yamada et al. do not normalize the input utterance by frequency-conversion using a selected frequency conversion coefficient, as required by claim 1. Instead, Yamada et al. normalize the vector length of the similarity vectors to unity (Col. 3, lines 46-50). Thus, Yamada et al. do not include all of the features of claim 1.

The subject invention provides advantages in speaker normalization that are neither disclosed nor suggested by the cited art. In the subject invention, an acoustic feature parameter is extracted for each frame and is frequency-converted by a plurality of frequency conversion coefficients (see S302 of Fig. 3 of the subject disclosure). A plurality of similarities are then determined between each of the plurality of frequency converted feature parameters and a standard phonemic model (S303 of Fig. 3). These processes, S302 and S303 of Fig. 3, are used to transform characteristics of an individual's utterance to characteristics of another speaker, i.e. a standard speaker. In this manner, speaker-based differences are normalized prior to speech recognition. (See also p. 18, lines 9-25 of the subject disclosure). In contrast, Yamada et al. do not disclose or suggest a speaker normalization process, as recited in claim 1. Instead, the process of Yamada et al. corresponds to speech recognition processing, analogous to a process executed by speech-recognition processing section 209 (Fig. 2 of the subject disclosure). Thus, Yamada et al. do not disclose or suggest all of the features or advantages of claim 1. Accordingly, allowance of claim 1 is respectfully requested.

Claims 2-7 include all of the features of claim 1 from which they depend. Accordingly, claims 2-7 are also patentable over the cited art.

Amended claim 8, although not identical to claim 1, includes features similar to claim 1 that are neither disclosed nor suggested by the cited art. Namely, 1) frequency converting an extracted acoustic feature parameter by filtering with a plurality of predetermined frequency conversion coefficients, 2) determining plural similarities/distances with frequency-converted feature parameters or 3) normalizing the input utterance by frequency-conversion using a selected frequency conversion coefficient. As discussed above, these features are neither disclosed nor suggested by Yamada et al. Accordingly, allowance of claim 8 is respectfully requested.

Claims 9-15 include all of the features of claim 8 from which they depend. Accordingly, claims 9-15 are also patentable over the cited art.

In view of the amendments and arguments set forth above, the above identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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